

# AIR MINISTRY

Air Navigation Acts, 1920  
and 1936

## THE AIR NAVIGATION REGULATIONS, 1938

Made by the Secretary of State  
for Air under the Air Navigation  
(Consolidation) Order, 1923

11th March, 1938



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## AIR NAVIGATION ACTS, 1920 and 1936

## REGULATIONS

In pursuance of the powers conferred upon me by the Air Navigation (Consolidation) Order, 1923, as authorised by the Air Navigation Acts, 1920 and 1936, and all other powers enabling me in that behalf, I, the Right Honourable Philip Cunliffe-Lister, Viscount Swinton, G.B.E., M.C., one of His Majesty's Principal Secretaries of State, make the following Regulations, amending the Air Navigation Directions, 1936 (A.N.D.13), as amended by the Air Navigation Directions, 1936 (A.N.D.13A), the Air Navigation Regulations, 1937, the Air Navigation (No. 2) Regulations, 1937, and the Air Navigation (No. 3) Regulations, 1937, which first-mentioned Directions as so amended are hereinafter referred to as "the said Directions".

1. Paragraph 25 of the said Directions shall be amended by the insertion at the end, of the following sentence:—

"If the aircraft is a flying machine and application has been made for it to be classified as belonging to the acrobatic category, the applicant may be required to fit it in an approved manner with a tail parachute of an approved description as a safeguard during the carrying out of spinning tests."

2. Paragraph 64 of the said Directions shall be amended as follows:—

(1) For the words "Illumination for instruments and equipment" in sub-paragraph (1) (i) (c), the following words shall be substituted:—

"Adequate electrical illumination, supplied from the main source of supply in the flying machine, for the instruments and equipment (including maps) the carriage of which is prescribed, and the illumination of which is necessary in order to enable use to be made of them during the flight."

(2) For the words "Illumination for instruments and equipment" in sub-paragraph (2) (ii), the following words shall be substituted:—

"Adequate electrical illumination, supplied from the main source of supply in the airship, for the instruments and equipment (including maps) the carriage of which is prescribed, and the illumination of which is necessary in order to enable use to be made of them during the flight."

(3) For the words "Illumination for instruments and equipment" in sub-paragraph (3) (i) (b), the following words shall be substituted:—

"Adequate illumination for the instruments and equipment (including maps) the carriage of which is prescribed, and the illumination of which is necessary in order to enable use to be made of them during the flight."

3. For paragraphs 80, 81, 82 and 83 of the said Directions the following paragraphs shall be substituted:—

"80. (1) Every flying machine used for the international carriage of passengers or goods for hire or reward and having to fly without landing—

(a) by day, more than 100 miles; or

(b) by night, more than 16 miles;

shall have on board as navigator the holder of a navigator's licence.



(2) Such licence must be a first-class one if the flying machine has to fly without landing—

(a) by day, more than 625 miles entirely over the high seas or regions which are not recognised by the competent authorities as being protected by radio-electric means or suitably marked ; or

(b) by night, more than 625 miles.

81. In cases to which paragraph 80 applies, the holder of the navigator's licence shall be a person other than the pilot of the flying machine—

(a) when the flying machine is engaged on a night flight not following a route recognised by the competent authorities as being protected by radio-electric means or suitably marked ; or

(b) when the case falls within paragraph 80 (2), and there is not on board the flying machine a second pilot who could, in case of need, take charge of the handling of the flying machine.

82. Every airship, for every flight by day or by night, shall have on board as navigator the holder of a navigator's licence and, if the airship is of 700,000 cubic feet capacity or more, such licence must be a first-class one.

83. For the purpose of paragraphs 80 to 82—

(a) The expression ' night ' means the period commencing one hour after sunset and terminating one hour before sunrise ;

(b) the expression ' a flight over the high seas ' means a flight in the course of which an aircraft, in following a straight line, may find itself over the sea at a distance of more than 65 miles from the nearest point of the coast ;

(c) references to the carriage of passengers or goods for hire or reward include references to the carriage of passengers or goods (whether for hire or reward or not) on behalf of an air transport undertaking ;

(d) references to licences relate to licences granted or rendered valid under the provisions of the Order."

4. In sub-paragraph (2) of paragraph 86 of the said Directions the words " where the holder is of the male sex and not more than four months where the holder is of the female sex " shall be omitted.

5. For sub-paragraph (d) of paragraph 93 of the said Directions, the following sub-paragraph shall be substituted :—

" (d) *Eye Examination.*—The applicant must possess a degree of visual acuity compatible with the efficient performance of his duties. Ocular muscle balance, the field of vision of each eye and colour perception must be normal.

Pilots must not be completely deprived of the use of either eye and must possess, with correction by glasses if necessary, a visual acuity equal to at least 70 per cent. of the normal visual acuity for each eye taken separately, the visual acuity being measured by means of a series of optotypes of Landolt, illuminated at 15 lux.

When this first measurement has been effected with correction by glasses the medical examiner shall, in addition, see that the visual acuity of the applicant, measured without correction by glasses, after the applicant has had time to adapt himself to these new requirements, is equal to at least 10 per cent. of the normal visual acuity for each eye taken separately.

With regard to colour perception, an applicant for a pilot's licence to fly private flying machines who is suffering from daltonism may, however, be accepted under the following conditions:—

(i) If he is unable to distinguish pigmentary colours but is able to distinguish the coloured lights used in air navigation, his licence may be made valid both for flight by night and for flight by day.

(ii) If he is unable to distinguish either pigmentary colours or the coloured lights used in air navigation, his licence may be made valid only for flight by day, that is to say, for flights effected between sunrise and sunset.

Navigators must possess, with correction by glasses if necessary, a visual acuity equal to 100 per cent., that is to say, normal for each eye taken separately, the visual acuity being measured by means of a series of optotypes of Landolt, illuminated at 15 lux. Ocular muscle balance, the field of vision of each eye and colour perception must be normal."

6. Paragraph 96 (b) of the said Directions shall be amended as follows:—

(1) For the third sub-paragraph, the following provisions shall be substituted:—

"Injuries of the head will be dealt with as follows—

(i) Cases of simple concussion, even with mild intracranial injury; will entail temporary unfitness for a period of at least one month from the date of the concussion.

(ii) A simple fracture of the skull without associated intracranial damage will entail temporary unfitness for a period of at least two months from the date of the fracture.

(iii) In case of severe intracranial injuries, the presence of local lesion of the brain will entail permanent rejection. In the first and second cases, after the applicant has resumed his duties, his licence will be rendered valid only for successive periods of two months, until the after-effects no longer appear liable to produce a sudden incapacity in flight.

Any trepanning with loss of the bony substance concerning the two tables of the cranial vault will entail rejection. The same will apply in case of lesion of the dura mater, even after a bonegraft."

(2) The following sub-paragraph shall be inserted immediately before the last sub-paragraph:—

"Any syphilis, past or present, affecting the central nervous system or its blood vessels or its membranes will entail the permanent rejection of the applicant."

7. For sub-paragraph (e) of paragraph 96 of the said Directions, the following sub-paragraph shall be substituted:—

"(e) *Eye Examination*.—The applicant must possess a degree of visual acuity compatible with the efficient performance of his duties. Ocular muscle balance, the field of vision of each eye and colour perception must be normal. Certain anomalous trichromats may, however, be admitted.

The applicant must possess, without correction by glasses, visual acuity equal to at least 80 per cent. of the normal visual acuity for each eye taken separately, or 90 per cent. for one eye and 70 per cent. for the other.



The holder of a licence no longer fulfilling these requirements of visual acuity may, however, be regarded as eligible to continue to hold his licence after the age of 35 when, at that age, he has effected as pilot of public transport or aerial work flying machines, at least 1,000 hours of flight and his visual acuity, measured without correction by glasses, is equal to at least 50 per cent. of the normal visual acuity for each eye taken separately.

These relaxations shall also be applicable to an applicant having already effected the same number of hours of flight as pilot of a State aircraft.

In case of application for the original issue of the licence, hypermetropia above 2.25 dioptries will entail rejection.

Visual acuity shall be measured by means of a series of optotypes of Landolt, illuminated at 15 lux."

8. For sub-paragraph (1) (g) of paragraph 99 of the said Directions the following shall be substituted :—

"(g) Instrument flying with an examiner on board, during which the candidate shall, without exterior view and by the sole use of the instruments on board, carry out ordinary manoeuvres, including one take-off, and for a period of thirty minutes maintain correctly his height and course.\*"

9. Paragraph 108 of the said Directions shall be amended as follows:—

(1) In sub-paragraph (3), after the word " aircraft " there shall be inserted the words " must have held a second-class licence for at least one year and ".

(2) For Schedules A and B the following Schedules shall be substituted :—

#### *SCHEDULE A*

"(1) Form of the earth ; its divisions and their notation ; mathematical calculation of the various elements by plane trigonometry to obtain course and distance ; elementary knowledge of the movements of celestial bodies as applicable to air navigation.

(2) Maps and charts ; how to read and use them ; practical properties of the common forms of projections.

(3) Compasses ; their construction, use and adjustment ; elementary principles of earth's magnetism.

(4) Flight by dead reckoning ; with the use of instruments for the measurement and calculation of the elements of the triangle of velocities.

(5) Navigation by radiogoniometry.

(a) Elementary knowledge of the various systems of guiding by radioelectric means applicable to the use of aircraft (apparatus in aircraft and ground installations). Value of the various systems in the practical conditions of operation.

(b) Methods of fixing the position of an aircraft by means of direction-finding bearings and radio beacons, with the application of the necessary corrections.

(c) Knowledge of the organisation and methods of radio-electric orientation, including the practical use of the operational groups of the " Q " code used in the Civil Aeronautical Radio Service.

(6) International air legislation ; regulations for the prevention of collisions at sea ; publications for the assistance of navigators.

(7) Signalling :—

(a) Use of signalling apparatus.

(i) Semaphore Ground—Ability to send and receive accurately messages made in plain language at the rate of 10 words per minute.

(ii) Flashing Ground—Ability to send and receive accurately messages made either in coded groups or in plain language and numerals at the rate of 8 words per minute.

(iii) Aural Morse Ground—Ability to send and receive accurately messages made either in coded groups or in plain language and numerals at the rate of 4 words per minute.

(b) Detailed knowledge of the procedure for opening up communication and conducting messages by means of Semaphore, Flashing and Aural Morse Signalling.

(c) International Code Flags. Names and colours of flags. Method of reading the flags when hoisted.

(8) Meteorology ; knowledge of meteorological elements and observations ; arrangements for the issue of meteorological reports for aviation ; principles of forecasting ; construction and interpretation of synoptic charts ; climatology.

#### SCHEDULE B.

A more advanced knowledge of the subjects in Schedule A and in addition :—

(1) Form of the earth ; the mathematical calculation of various elements by spherical trigonometry (great circle courses and distances).

(2) Maps and Charts ; the principles of construction of the common forms of projections.

(3) Tides ; elementary theory and prediction by the aid of tables.

(4) Astronomical navigation ; various methods of fixing the position of an aircraft, with the use and care of tables, diagrams and instruments for the solution of this problem ; knowledge of the mathematics involved."

10. These Regulations may be cited as the Air Navigation Regulations, 1938.

11. These Regulations shall come into operation, as regards paragraph 2 thereof, on the 1st October, 1938, and otherwise on the 1st, 1938.

SWINTON

*Secretary of State for Air.*

Air Ministry,

11th March, 1938.